The chemotaxonomic significance of the limonoid, nymania-1, in *Turraea obtusifolia*

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The genus *Nymania* has been chemotaxonomically linked to the family Meliaceae by the finding that it produces prieurianin, a complex limonoid characteristic of the subfamily Meliodeae. However, there has been no chemical evidence to link it more specifically to the tribe Turraeeae, in which it is placed. We now report that nymania-1, a characteristic limonoid of *Nymania capensis*, also occurs in the seed of *Turraea obtusifolia*. This evidence provides a chemotaxonomic link between the genera *Nymania* and *Turraea*.

Die genus *Nymania* is oorspronklik chemotaksonomies met die familie Meliaceae verbind, omdat dit 'n komplekse limonoïed, prieurianin, vervaardig wat 'n kenmerk van die onderfamilie Meliodeae is. Maar daar is nog geen chemiese bewyse om *Nymania* meer spesifiek met die tribus Turraeeae te verbind nie. Ons berig hierin dat nymania-1, 'n karakteristieke limonoïed van *Nymania capensis*, ook in die saad van *Turraea obtusifolia* gevind is. Hierdie bewyse verskaf 'n chemotaksonomiese verbintenis tussen die genera *Nymania* en *Turraea*.

Keywords: Limonoids, Meliaceae, *Nymania*, *Turraea obtusifolia*, Turraeeae.

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Introduction

Nymania was recognized both by De Jussieu (1789) and Ventenat (1799) as belonging to the Meliaceae. However, not all subsequent authors have agreed with this conclusion, and at various times it has been placed in six different families. This is mainly on account of the obvious superficial differences from other members of the Meliaceae family. However, modern authors consider evidence of the relationship with the Meliaceae to be convincing (Pennington & Styles 1975). MacLachlan & Taylor (1982) showed that the bark and timber of *Nymania capensis* contained the known limonoid prieurianin (Gullo *et al.* 1975) (**1**), together with four other complex limonoids which had not previously been found elsewhere. These were named as nymania substances 1–4. Prieurianin is a highly characteristic marker substance, which is widely distributed in the subfamily Meliodeae of the Meliaceae (Taylor 1984), having been found in *Trichilia prieuriana* (Bevan *et al.* 1965), *Guarea guidonia* (Lucacova *et al.* 1982) and *Ekebergia pterophylla* (Mulholland, unpublished work), and *Turraea obtusifolia* (Akkiniyi *et al.* 1986). This provided good chemotaxonomic evidence for including Nymania in the subfamily Meliodeae.

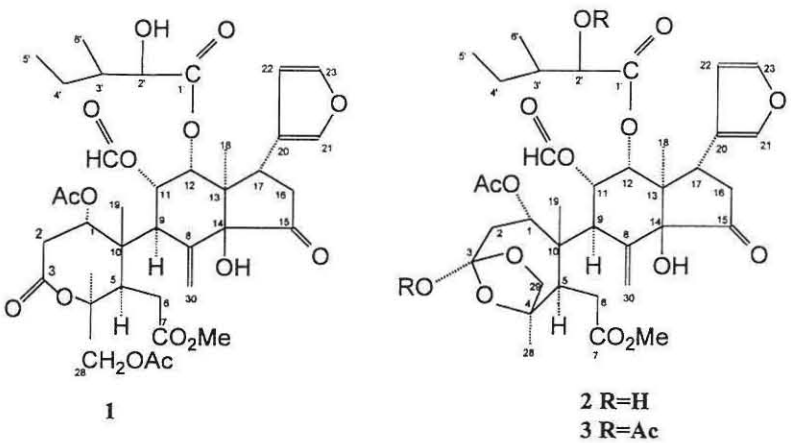
Pennington & Styles (1975) placed *Nymania* in the tribe Turraeeae of the Meliodeae subfamily.

Materials and Methods

Seed (19 g) of *T. obtusifolia* was collected from the garden of Mr Geoff Nicholls on the Natal South Coast. The dried and crushed seed was extracted with refluxing hexane for 24 h in a Soxhlet apparatus, the extract (225 mg) was chromatographed on a gravity column (silica, Merck. Art. 7729), using CH_2Cl_2: EtOAc – 60:40, which gave impure nymania-1 (**2**). For purification, this was converted to its crystalline acetate (**3**). TLC (Merck Art. 5553 using CH_2Cl_2: EtOAc – 70:30) showed one major component, which was isolated (13 mg) after repeated column chromatography. The structure was confirmed using ^1H, ^{13}C, COSY and HETCOR NMR spectroscopy.

Results

We have now examined the seed of *Turraea obtusifolia*, and find that this also contains the limonoid nymania-1 (**2**). This provides chemical evidence for a close relationship between *Nymania* and *Turraea* and supports *Nymania*'s placement in the tribe Turraeeae.



1 **2 R=H** **3 R=Ac**

Figure 1 The three limonoids prieurian (**1**), nymania-1 (**2**) and nymania-1 diacetate (**3**).

Conclusion

The presence of the complex limonoid nymania-1 in *Turraea obtusifolia* seeds supports the close relationship of the genera *Turraea* and *Nymania*.

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